CLAIMS

What is claimed is:

1. An image forming apparatus, comprising:

an engine mechanism to carry out a printing job with respect to a print data;

an image processing unit to convert the print data into image data recognizable by the engine mechanism;

an engine controlling unit to control the engine mechanism to carry out the print job with respect to the image data, and

a circuit element, wherein

the engine controlling unit and the image processing unit are arranged on a single printed circuit board (PCB) in which a first division and a second division are defined, with the engine controlling unit being arranged in the first division and the image processing unit being arranged in the second division, wherein the circuit element in.the second division is shared by the engine controlling unit and the image processing unit.

2. The image forming apparatus of claim 1, wherein the image processing unit and the engine controlling unit are connected via a bi-directional parallel bus.

3. The image forming apparatus of claim 1, wherein the image processing unit has a single processor, and the engine controlling unit is driven by the control of the single processor.

4. The image forming apparatus of claim 3, wherein the engine controlling unit is configured as an application specific integrated circuit (ASIC).

5. The image forming apparatus of claim 4, wherein the processor and the ASIC are arranged to face each other.

6. The image forming apparatus of claim 5, wherein the engine controlling unit comprises at least one connector for an interfacing with the engine mechanism, the connector being arranged to face a connection pin of the ASIC in a perpendicular and a horizontal relation.

7. The image forming apparatus of claim 1, wherein the shared circuit element comprises at least one of a random access memory (RAM), a Flash read only memory (ROM) and a read only memory (ROM).

8. The image forming apparatus of claim 7, wherein the engine controlling unit shares at least one of the RAM, the Flash ROM and the ROM with the image processing unit.

9. The image forming apparatus of claim 1, wherein the image processing unit further comprises a connector to receive the print data, the connector being arranged to face a connection pin of the image processing unit in a perpendicular and a horizontal relation.

10. An image forming apparatus, comprising:
      an engine mechanism to carry out a print job with respect to a print data;
      an image processing unit to convert the print data into image data recognizable by the engine mechanism; and
      an engine controlling unit to control the engine mechanism to carry out the print job with respect to the image data, wherein
      the image processing unit and the engine controlling unit are each configured as a processor and an application specific integrated circuit (ASIC), which are directly connected via a bi-directional bus.

11. The image forming apparatus of claim 10, wherein the ASIC generates a control signal to drive the engine mechanism in response to the image data applied from the image processing unit.

12. The image forming apparatus of claim 10, wherein the ASIC further comprises a memory to store status information of the engine mechanism.

13. The image forming apparatus of claim 12, wherein the processor checks the status of the engine mechanism by reading the stored status information from the memory, and controlling the ASIC to transmit the image data to the engine controlling unit and carry out the print job.

14. The image forming apparatus of claim 10, wherein the bi-directional bus comprises at least one of an address bus, a data bus and a control bus, and is configured as a parallel bus.

15. The image forming apparatus of claim 14, wherein the processor and the ASIC are directly connected with each other via the bi-directional bus, and arranged to face each other.

16. The image forming apparatus of claim 10, wherein the image processing unit and the engine controlling unit are arranged on a single printed circuit board (PCB) which has more than one division defined thereon, and are directly connected with each other via the bi-directional bus.

17. The image forming apparatus of claim 10, wherein the engine controlling unit comprises at least one connector to connect to the engine mechanism, and the connector is arranged to face a connection pin of the ASIC in a horizontal and a perpendicular relation.

18. A PCB arrangement method of an image forming apparatus having an engine mechanism to carry out a print job with respect to print data applied from an external device, an image processing unit to convert the print data from the external device into image data format, an engine controlling unit to control the engine mechanism to carry out the print job with respect to the image data, and a circuit element,
the PCB arrangement method arranging the image forming apparatus on a single PCB, comprising the operations of:
defining the PCB into a first division and a second division ; and
arranging the image process in the first division and the engine controlling unit in the second division, in a manner that the image processing unit and the engine controlling unit share the circuit element which is arranged in the first division.

19. The PCB arrangement method of claim 18, wherein the operation of arrangement in the first division further comprises the operation of installing a connector in the first division to interface with the engine mechanism.

20. The PCB arrangement method of claim 18, wherein the connector is arranged in at least a part of a boundary of the PCB corresponding to the first division.

21. The PCB arrangement method of claim 18, wherein the shared circuit element comprises at least one of a random access memory (RAM), a Flash read only memory (ROM) and a read only memory (ROM).

22. The PCB arrangement method of claim 18, wherein the engine controlling unit shares at least one of the RAM, the Flash ROM and the ROM with the image processing unit.

23. The PCB arrangement method of claim 18, wherein the image processing unit is arranged in the second division, and has a connector to interface with the external device, the connector being arranged to face the image processing unit.

24. A PCB arrangement method of an image forming apparatus having an engine mechanism to carry out a print job with respect to print data applied from an external device, an image processing unit to convert the print data from the external device into image data format, and an engine controlling unit to control the engine mechanism to carry out the print job with respect to the image data, the PCB arrangement method comprising the operations of:

arranging the image processing unit and the engine controlling unit on a single PCB; and

connecting the image processing unit and the engine controlling unit on the single PCB via a bi-directional parallel bus.

25. The PCB arrangement method of claim 24, wherein the image processing unit is configured as a processor and the engine controlling unit is configured as an application specific integrated circuit (ASIC).

26. The PCB arrangement method of claim 24, wherein the image processing unit and the engine controlling unit are arranged to face each other.

27. The PCB arrangement method of claim 26, further comprising the operation of installing a connector to a side of the single PCB to interface between the engine controlling unit and the engine mechanism.